## RESPONSE

*Rejection under 35 USC 102(b)*

The Examiner has rejected Claims 1, 4, and 11-13 under 35 USC 102(b) as being anticipated by Gadoury (US Patent 5,830,574).

The Examiner's argument is essentially as follows:

> "Gadoury teaches that synthetic melamine fiber and cellulose fiber can be woven together and dyed so that either the synthetic fiber or the cellulose fiber is dyed and the other remains undyed giving a chambray appearance (Abstract). In one embodiment (col. 6, lines 20-40), the synthetic melamine is dyed and the cellulose fiber remains undyed. As to claim 4, the fabric is woven into a plain weave (col. 14, lines 65-66). As to claims 11-13, the examples disclosed in the patent use cotton that has a cotton count of 12 (col. 14, lines 63-65)."

Applicant submits that the Gadoury reference does not teach that the warp of the fabric is homogeneous or that the filling is also homogeneous but a different material than the warp. One of the objects of Applicant's invention is "to provide a method of making a chambray fabric, by non-union dyeing of a woven fabric with a homogeneous warp of one fiber type and a homogeneous filling of a second, different fiber type, where one fiber type is synthetic and one fiber type is cellulosic" (page 6, lines 13-16). Having clarified the intended scope of Claim 1, Applicant believes that such claim is now in condition for allowance.

Because the reference does not show all the limitations of the Applicant's claim, the rejection is believed to be improper and should be withdrawn. Applicant requests that the rejections of dependent claims 4, 11, 12, and 13, which depend from Claim 1 and have the same limitations as Claim 1, should also be withdrawn.

*Rejection under 35 USC 103*

*Rejection of Claims 1, 3-7, and 11-14*

Claims 1, 3-7, and 11-14 are rejected under 35 USC 103(a) as being unpatentable over Collier (US Patent 5,487,936) in view of Gadoury (US Patent 5,930,574).

The Examiner's argument is essentially as follows:

> "Collier discloses a woven fabric where the warp threads have a different composition than the weft threads (Abstract). Either the warp or the weft is composed of at least one multi-filament yarn, and the other is optionally composed of spun fiber yarn (column 2, lines 31-44). The spun yarns are made of cotton (column 3, line 19) and the filament yarns are made of polyester, polyamide, polypropylene, etc. (column 3, lines 25-27). Thus, when the fabric is made with synthetic filaments in the warp direction, then cellulosic yarns are used in the weft direction. Both warp and weft

yarns are homogeneous. The disclosure does not provide the use of blended yarns in either direction.

"Collier teaches the woven fabric to be differentially dyed where the synthetic yarns are dyed one color and the cellulosic yarns are dyed another color (column 2, lines 55-60). Collier does not teach to leave the cellulosic yarns to remain undyed, but does point out that numerous dye routes can be used in the invention to create a wide variety of fabrics with varying visual effects (column 10, lines 15-18). Gadoury teaches a fabric consisting of synthetic yarns in either warp or weft and cellulosic yarns in the other direction, where only the synthetic yarns are dyed and the cellulosic yarns remain undyed in order to give a chambray appearance. It would have been obvious to one skilled in the art to dye only the synthetic warp yarns of the fabric taught by Collier in order to create a fabric with a chambray appearance and to save on the amount of dye used, as taught by Gadoury.

"With regard to Claim 3, Collier does not disclose a weight for the fabric. However, discovering an optimum weight value suitable for the intended use would only derive routine skill in the art. It would have been obvious to one skilled in the art to make the fabric taught by the combination of Collier and Gadoury weigh 4 to 8.5 ounces per square yard, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

"With regard to Claim 4, Collier discloses a 1X1 plain weave and a 2X2 twill weave (column 4, lines 11-17). With regard to Claim 7, Collier does not disclose the denier of the polyester filaments to be between 150 and 300. It would have been obvious to one skilled in the art as a matter of design choice to increase the denier from 70 (column 5, line 48) to between 150 and 300 in order to create a heavier, more durable fabric, since such a modification would have involved a mere change in the size of a component. Similar motivation applies to Claims 13 and 14.

"Collier discloses the cotton count of spun cotton fiber to be 40. It would have been obvious to one skilled in the art as a matter of design choice to decrease the cotton count from 40 to between 16 and 18 in order to create a heavier, more durable fabric, since such a modification would have involved a mere change in the size of a component."

To establish a *prima facie* case of obviousness, one must consider (a) whether there is motivation in the references themselves to combine the reference teachings; (b) whether there is a reasonable expectation of success; and (c) whether the prior art references teach all of the limitations of the claims (MPEP 2143).

*A. Motivation to Combine*

Applicant submits that there is no motivation within the references to combine the references to create a chambray fabric having a homogeneous warp and a different homogeneous filling. Gadoury is directed to a chambray fabric containing melamine fibers, in which the cellulosic component may be stained slightly. Collier describes a process to create "a woven cloth . . . which can be custom colored with at least two

different colors to produce a colored cloth having appearance very similar to that of shot silk" (Column 2, lines 2-6). Collier's resultant product is "wide width sheeting with color effects that have heretofore only been possible by substantially more expensive yarn dyeing methods" (Column 10, lines 12-14). Although Gadoury's object is the creation of a chambray fabric, there is no suggestion, in either the Gadoury or Collier, to combine the references.

*B. Reasonable Expectation of Success*

Collier is directed to a unique dyeing technique using two different dyestuffs to produce a shot silk effect. Gadoury is directed to the production of a chambray fabric that includes a melamine component. Gadoury states "because the chemistry of the melamine fiber is different than the more commonplace man-made synthetic fibers, the dyestuffs known to dye these more common fibers do not necessarily dye melamine fibers" (Column 1, lines 22-25). If Collier's two-dye technique was applied to the Gadoury substrate, there is no reasonable expectation of creating a chambray having one set of undyed yarns. Conversely, if Gadoury's dye technique was applied to Collier's sheeting substrate, there is no reasonable expectation of creating a chambray that has one set of undyed yarns and that is suitable for apparel application.

*C. Teaching of All Limitations of the Claims*

Gadoury does not teach that the warp of the fabric is homogeneous or that the filling is also homogeneous but of a different material than the warp. Collier does not teach the creation of a chambray fabric. Neither Gadoury nor Collier teaches a fabric that exhibits a non-uniform stretch between 10% and 16% in the direction of the cellulosic fibers.

For these reasons, Applicant believes that the combination of Gadoury and Collier is not sufficient to create a prima facie case of obviousness and, accordingly, that the rejection of Claims 1, 3-7, and 11-14 should be withdrawn.

## *Rejection of Claims 2 and 15*

Claims 2 and 15 are rejected under 35 USC 103(a) as being unpatentable over Collier in view of Gadoury and further in view of Goldthwait (US Patent 2,404,837).

The Examiner's argument is essentially as follows:

> "Collier and Gadoury do not teach the fabric material to exhibit a non-uniform stretch between 10 and 16% in the direction of the cellulosic fibers. Goldthwait teaches a fabric made of cotton with a degree of stretchability in either the warp or weft direction (column 1, lines 8-14). The stretch values in Table 1 (column 4, lines 42-53) fall within the claimed range. And the stretch would be non-uniform since the crimps formed in the cotton fibers appear to be random (Figure 2). It would have been obvious to one skilled in the art to make the cotton fibers in the weft direction exhibit a degree of stretchability in the fabric taught by the combination of Collier and Gadoury in order to create a fabric that can stretch and be better suited for use in clothing, as taught by Goldthwait."

The shortcomings of the combination of the Collier and Gadoury references have been discussed above. Claim 2 has been incorporated into Claim 1. Applicant believes that

the specification, as originally filed, differentiates the stretch characteristic of his invention from that described by Goldthwait. While Goldthwait's patent describes a fabric having non-uniform (that is, random) stretch characteristics, Applicant defines "non-uniform" as being "only in the direction of cellulosic yarns 12" (page 9, lines 20-21). The term non-uniform, as used by Applicant, is intended to describe the shrinkage of the entire fabric (length versus width) rather than non-uniform shrinkage in either the length or width.

For these reasons, the combination of Collier, Gadoury, and Goldthwait do not teach the present invention. Applicant respectfully requests that the rejection of Claim 15 be withdrawn.

*Rejection of Claims 8-10*

Claims 8-10 are rejected under 35 USC 103(a) as being unpatentable over Collier in view of Gadoury and further in view of Tortora (*Understanding Textiles, 4th Edition*, pp. 265-269).

The Examiner's argument is essentially as follows:

> "Collier and Gadoury do not teach using spun synthetic yarns in the fabric material. Tortora teaches open-end spun yarns are frequently used in denim products and offer a more uniform appearance. It would have been obvious to one skilled in the art to prepare the synthetic polyester yarns from open-end spinning in order to create a more uniform fabric. With regard to Claims 9 and 10, it would have been obvious to one skilled in the art to create these fibers with a cotton count of between 24 and 36 in order to create a fabric with the desired strength and weight properties suitable for the intended use."

Collier and Gadoury lack the homogeneous warp of one fiber type and the homogeneous weft of a second fiber type that characterizes Applicant's invention. As has been discussed above, Applicant believes that the combination of these two references fails to establish a prima facie case of obviousness. As to the Tortora reference, Tortora does not enable the creation of a chambray fabric having open-end spun polyester yarns and yarns having a certain cotton count.

Applicant submits that the stretch quality, fabric weight, yarn deniers, and yarn cotton counts are not obvious in light of the Tortora reference. There are no teachings in the reference to suggest the Applicant's optimum values for these attributes, nor is there any teaching to suggest that modification of these features would have been obvious to one of skill in the art.

As such, Applicant respectfully submits that the Examiner's rejection of Claims 8-10 under 35 USC 103(a) is improper and requests that such rejections be withdrawn.

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Case # 2126



**CLEAN COPY OF AMENDED CLAIM**
**U.S. Patent Application Serial # 09/469,949 to Lovingood**

1. (twice amended) A chambray fabric, said fabric having homogeneous warp yarns and homogeneous filling yarns, wherein said warp yarns are comprised of a homogeneous fiber type and wherein said filling yarns are comprised of a homogeneous fiber type that is different than that of said warp yarns, one of said fiber types being synthetic and the other of said fiber types being cellulosic, and wherein only said synthetic yarns are dyed and said fabric exhibits a stretch of between 10% and 16% in the direction of said cellulosic fibers.